

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A transgenic ungulate comprising one or more artificial chromosomes, each artificial chromosome comprising one or more immunoglobulin loci that undergo rearrangement and express a xenogenous immunoglobulin molecule ~~one or more nucleic acids encoding all or part of a xenogenous immunoglobulin (Ig) gene which undergoes rearrangement and expresses more than one xenogenous Ig molecule.~~

2. (Currently amended) The ungulate of claim 1, wherein said xenogenous Ig immunoglobulin molecule is a human Ig immunoglobulin molecule.

3. (Currently amended) The ungulate of claim 1, wherein said one or more artificial chromosomes comprise a human artificial chromosome ~~nucleic acid is contained within a chromosome fragment.~~

4. (Currently amended) The ungulate of claim 3, wherein said human artificial chromosome ~~is fragment is a~~ Δ HAC or $\Delta\Delta$ HAC.

5. (Original) The ungulate of claim 1, wherein said ungulate is a bovine, ovine, porcine, or caprine.

6-9. (Cancelled)

10. (Currently amended) An ungulate somatic cell comprising one or more artificial chromosomes, each artificial chromosome comprising one or more immunoglobulin loci capable of undergoing rearrangement and expressing a xenogenous immunoglobulin molecule ~~one or more nucleic acids encoding all or part of a xenogenous Ig gene, wherein said gene is capable of undergoing rearrangement and expressing one or more xenogenous Ig molecule~~ in B cells.

11. (Currently amended) The cell of claim 10, wherein said xenogenous immunoglobulin molecule is a human immunoglobulin molecule ~~nucleic acid encodes a xenogenous antibody.~~

12. (Currently amended) The cell of claim 10, wherein said one or more artificial chromosomes comprise a human artificial chromosome ~~nucleic acid is contained in a chromosome fragment.~~

13. (Original) The cell of claim 10, wherein said cell is a fetal fibroblast or B-cell.

14. (Original) The cell of claim 10, wherein said ungulate is a bovine, ovine, porcine, or caprine.

15-20. (Cancelled)

21. (Currently amended) A method of producing antibodies, said method comprising the steps of: (a) administering one or more antigens of interest to an ungulate comprising one or more artificial chromosomes, each artificial chromosome comprising one or more immunoglobulin loci that undergo rearrangement, resulting in production of antibodies against said one or more antigens ~~encoding a xenogenous antibody gene locus, wherein the nucleic acid segments in said gene locus undergo rearrangement resulting in the production of antibodies specific for said antigen;~~ and (b) recovering said antibodies from said ungulate.

22. (Cancelled)

23. (Currently amended) The method of claim 21, wherein said one or more artificial chromosomes comprise a human artificial chromosome ~~nucleic acid is contained in a chromosome fragment.~~

24. (Currently amended) The method of claim 21, wherein said immunoglobulin loci comprise ~~nucleic acid~~ is a human immunoglobulin locus ~~nucleic acid~~.

25. (Original) The method of claim 21, wherein said ungulate is a bovine, ovine, porcine, or caprine.

26. (Currently amended) A method of producing xenogenous antibodies, said method comprising recovering xenogenous antibodies from an ungulate, said ungulate comprising one or more artificial chromosomes, each artificial chromosome comprising one or more immunoglobulin loci that undergo rearrangement, ~~nucleic acid encoding a xenogenous antibody gene locus, wherein the nucleic acid segments in said gene locus undergo rearrangement~~ resulting in the production of xenogenous antibodies.

27. (Cancelled).

28. (Currently amended) The method of claim 26, wherein said one or more artificial chromosomes comprise a human artificial chromosome ~~nucleic acid is contained in a chromosome fragment~~.

29. (Currently amended) The method of claim 26, wherein said ungulate is a

bovine, ovine, porcine, or caprine.

30-48. (Cancelled)

49. (New) The ungulate of claim 1, wherein said immunoglobulin molecule is an immunoglobulin light chain.

50. (New) The ungulate of claim 1, wherein said immunoglobulin molecule is an immunoglobulin heavy chain.

51. (New) The ungulate of claim 3, wherein said human artificial chromosome is derived from one or more of human chromosome 14, human chromosome 2, and human chromosome 22.

52. (New) The cell of claim 10, wherein said immunoglobulin molecule is an immunoglobulin light chain.

53. (New) The cell of claim 10, wherein said immunoglobulin molecule is an immunoglobulin heavy chain.

54. (New) The cell of claim 12, wherein said human artificial chromosome is derived from one or more of human chromosome 14, human chromosome 2, and human chromosome 22.

55. (New) The method of claim 21, wherein said immunoglobulin is an immunoglobulin light chain.

56. (New) The method of claim 21, wherein said immunoglobulin is an immunoglobulin heavy chain.

57. (New) The method of claim 23, wherein said human artificial chromosome is derived from one or more of human chromosome 14, human chromosome 2, and human chromosome 22.

58. (New) The method of claim 26, wherein said immunoglobulin molecule is an immunoglobulin light chain.

59. (New) The method of claim 26, wherein said immunoglobulin molecule is an immunoglobulin heavy chain.

60. (New) The method of claim 28, wherein said human artificial chromosome is derived from one or more of human chromosome 14, human chromosome 2, and human chromosome 22.

61. (New) A method of producing immunoglobulin, said method comprising providing an ungulate, said ungulate comprising one or more artificial chromosomes, each artificial chromosome comprising one or more immunoglobulin loci that undergo rearrangement and express a xenogenous immunoglobulin, and (ii) recovering said xenogenous immunoglobulin.

62. (New) The method of claim 61, wherein said immunoglobulin molecule is an immunoglobulin light chain.

63. (New) The method of claim 61, wherein said immunoglobulin molecule is an immunoglobulin heavy chain.

64. (New) The method of claim 61, wherein said one or more artificial chromosomes comprise a human artificial chromosome.

65. (New) The method of claim 64, wherein said human artificial chromosome is

derived from one or more of human chromosome 14, human chromosome 2, and human chromosome 22.